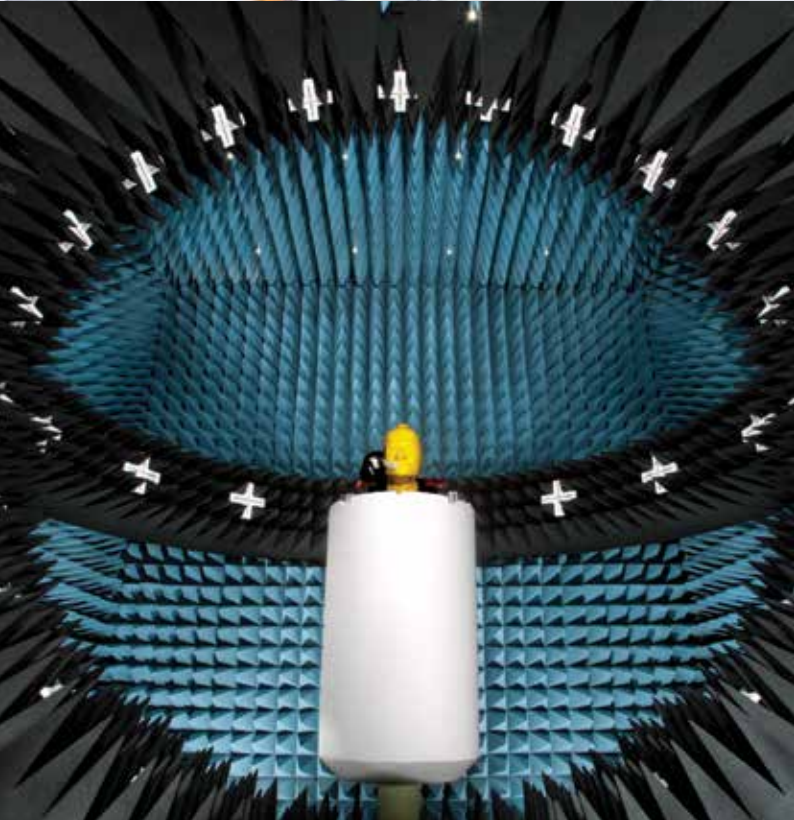




TEST AND MEASUREMENT SOLUTIONS

TEST SYSTEMS
TEST CHAMBERS
COMPONENTS
ENGINEERING SERVICES



THE SUREST SOLUTION BY ANY MEASURE™

 **ETS·LINDGREN®**

An ESCO Technologies Company

ets-lindgren.com

ABOUT US

If you use a cell phone, drive a car, listen to music, or had an MRI scan, chances are ETS-Lindgren made those experiences possible.

We design, manufacture, and provide:

- Systems and Components for Radio Frequency (RF) Test and Measurement
- RF Isolated Environments for Electromagnetic Compliance (EMC) Measurement, Wireless and Microwave Compliance and Performance Testing
- Acoustically Isolated Environments for Sound Level Measurements, Audiology Diagnostics, Broadcasting, and Security Applications
- RF Shielding and Safety Solutions for Magnetic-Resonance Imaging (MRI) Rooms
- RF Shielding for Electromagnetic Pulse (EMP) and Tempest Defense Applications
- Systems to Measure Human Exposure to Electromagnetic and Magnetic Sources
- Product Testing and Instrument Calibration in Labs Accredited with A2LA, NVLAP, and the CTIA
- Engineering, Consulting and Educational Services

From our inception in 1995, ETS-Lindgren has continuously grown in size, revenue, and capability. We now employ more than 800 professionals at locations in the Americas, Europe and the Middle East, and Asia. In addition, we have a global network of independent representatives and distributors reaching into almost every corner of the world. Our customers benefit with local support from specialists who are backed by the global resources of ETS-Lindgren.

ETS-Lindgren is a subsidiary of ESCO Technologies Corporation (NYSE symbol ESE).

CERTIFIED COMPANY

ISO 9001:2008

BEIJING • CEDAR PARK • EURA • STEVENAGE • TAUFKIRCHEN

CTIA Authorized Test Lab

LAB CODE 20021212-00





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ETS-Lindgren's antennas are designed with the latest computational modeling tools, manufactured with exacting precision, and individually tested, characterized and/or calibrated in our A2LA accredited lab.



www.ets-lindgren.com/antennas

ANTENNAS

Biconical and MiniBicon Series



Omnidirectional broadband antennas for EMC measurement and spectrum monitoring.

BiConiLog™ Series



Extremely broadband EMC antennas for pre-scan and compliance measurements.

Log Periodic Series



High gain, low VSWR broadband antennas. For EMC measurements and applications where directivity is required.

Conical Log Spiral



A broadband circularly polarized antenna for sensing or generating circularly polarized waves.

Standard Gain, Octave, and Conical Horn Series



High gain and linearly polarized. Ideal as reference antennas for immunity testing and sources for tapered chambers.

Double-Ridged Waveguide Horn Series



Multi-octave linearly polarized horns with high gain.

Open Boundary Quadridge Horn Series



Multi-octave dual linearly polarized horns with high gain. For sensing two orthogonal field components.

Field Generating Pyramidal Horn Series



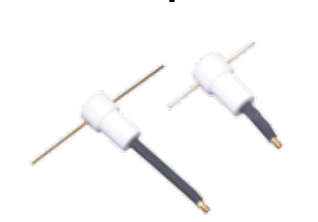
Optimized to generate the highest power density in the near field.

Tuned Dipole Series



The “original” EMC antenna. Accepted by many as the most precise for EMC measurements.

Fixed Length, Balanced Dipole Series



Reference dipole antennas for wireless testing including GPS and RFID characterization.

Precision Sleeve Dipole & Resonant Loop Series



Designed to meet the CTIA 0.2 dB azimuth symmetry requirements for the ripple test and calibration.

Loop & Magnetic Field Coil Series



Shielded and unshielded, active and passive coils and loop antennas, for ELF to HF ranges.

Electric Monopole (Rod) Series



Active and passive short monopole-type antennas for ELF to HF ranges. Ideal for MIL-STD 461 and CISPR 25.

Pre-Amps



The most popular EMC emission antennas are available with pre-amplifiers. These units are calibrated as a single active antenna system.

Custom Antenna Solutions



We can custom design, test, manufacture, and calibrate the antenna solution that best fits your needs.

Individually Calibrated



We calibrate each of our EMC antennas at our A2LA accredited lab in accordance with the appropriate standards.

ETS-Lindgren's antenna towers and turntables were the first commercially available units for EMC measurement applications.

In addition to a being a leader in positioners for EMC testing, we provide positioners for antenna pattern measurement and wireless testing.



[*www.ets-lindgren.com/positioners*](http://www.ets-lindgren.com/positioners)

POSITIONERS

EMCenter with Optional EMControl Module



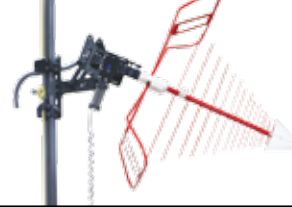
The EMCenter™ with the optional EMControl™ module allows for operation of up to two ETS-Lindgren positioners.

Model 2170B Antenna Tower



Features centerline air polarization and variable speed operation for enhanced positioning precision. 1 to 4 meter scan range.

Model 2171B Antenna Tower



A reduced footprint tower with bore site capability, which keeps the EUT within the beam of the measurement antenna.

Model 2175 MiniMast™ Antenna Tower



Space-saving design allows for use in compact chambers.

Model 1052 Manual Antenna Tower



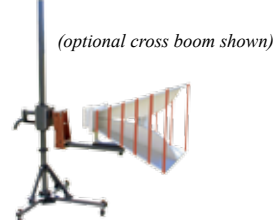
Manually operated, portable positioner where quick measurements or pre-scans are needed.

4-TR Tripod Positioner



Portable and collapsible tripod for small to medium sized antennas and probes.

7-TR Tripod Positioner



Wide footprint with increased stability for physically large antennas. Air polarization and optional cross booms available.

Model 1062 Manual Turntable



Low profile, manually operated, wood-topped turntable for pre-scan measurements. 1.2 m diameter. Load rating: 450 kg (1,000 lb).

2165 LoPro™ Turntable



Indoor/outdoor use. This portable turntable sits virtually flush with the floor. 1.2 m diameter. Load capacity: 272 kg (600 lb).

2181 Series Heavy-Duty Turntable



Variable speed, indoor/outdoor use: 2 to 6 m diameters, custom units available. Standard model load rating: 9,000 kg (19,841 lb).

2187 Series Medium-Duty Turntable



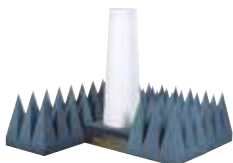
Variable speed, indoor/outdoor use: 2 to 3 m diameters, custom units available. Standard model load rating: 1,200 kg (2,645 lb).

2188 EuroPro™ Series Light-Duty Turntable



Variable speed, indoor use for height critical installs: 1.2 to 2 m diameters, custom units available. Standard model load rating: 1,000 kg (2,200 lb).

Model 2005 Single Axis Light-Duty Positioning System



Economical solution for basic azimuth (polar) pattern measurements of active and passive devices. Features a low dielectric EUT platform, variable speed operation. Load rating: 11.3 kg (25 lb).

Model 2020 Multi-Axis Heavy-Duty Positioning System



Custom heights available, dependant upon measurement requirements. Positioner accommodates up to 35 kg (75 lb) combined phantom and DUT weight.

Model 2115 Multi-Axis Medium-Duty Positioning System



Custom heights available, dependant upon measurement requirements. Positioner for DUTs weighing up to 11.3 kg (25 lb).

Model 2110 Multi-Axis Light-Duty Positioning System



Custom heights available, dependant upon measurement requirements. Positioner for testing wireless handsets up to .45 kg (1 lb).

ETS-Lindgren's HI Series of Broadband E-Field probes meet or exceed the requirements of today's automotive, MIL-STD and commercial EMC RF immunity standards.

The high level of performance offered by these probes meets today's requirements as well as tomorrow's challenges.



www.ets-lindgren.com/probes

PROBES AND MONITORS

Field Monitors



Allows quick and easy gathering and processing of data from all ETS-Lindgren E-field probes.

E-Field Probes



Either battery or laser powered, these E-Field probes enable fast and accurate EMF measurements with industry-leading performance specifications.

Probe Stand



Designed for accurate and repeatable probe positioning when performing field uniformity calibrations.

Fiber Optic Converters



Allows a PC to be used for quick processing of data from ETS-Lindgren EMF probes. See page 28 for ProbeView™ EMF Software.

Low Frequency Health and Safety Meters



Provides accurate measurements of electromagnetic fields in low frequency applications.

Health and Safety Meters



Compact RF Survey Meters designed for basic safety measurements in broadcast and healthcare facilities.

Electric Field Health and Safety Probes



Broadband electric probes for making RF exposure measurements in the vicinity of broadcast facilities and industrial RF sources.

Magnetic Field Health and Safety Probes



Broadband magnetic probes for making RF exposure measurements in the vicinity of broadcast facilities and industrial RF sources.

Microwave Oven Survey Meters



Provides accurate microwave oven leakage measurements. Models include handheld, bench top models and area monitors.

Bulk Current Injection Probes



Used to inject RF current into conductors and cables of electrical and electronic equipment during susceptibility testing.

Current Probes



Accurately measures current flowing on a wire or bundle of wires without requiring a direct connection to the conductor(s).

E & H Near Field "Sniffer" Probe Set



Passive near field probe set designed as a diagnostic aid for locating and characterizing sources of E and H field emissions.

The design and manufacture of our test enclosures is approached with a complete understanding of every component part, the scientific principles of each, and the ability to successfully integrate them for optimal performance.



[*www.ets-lindgren.com/enclosures*](http://www.ets-lindgren.com/enclosures)

ENCLOSURES

Bench Top Test Enclosures



Upright bench top system for general RF testing of small to medium sized DUTs. Can be customized with filter and feedthrough options.

Copper Bench Top Test Enclosure



A high performance, copper shielded enclosure designed for fast, convenient EMI/RFI testing and verification.

Wireless Interface Test Enclosure



For testing cell phone transmit and receive functionality with or without direct cable connection to the RF or data ports.

Access Point Test Enclosure



Allows for Over-The-Air (OTA) testing of transmit and receive functionality and throughput performance.

Shielded Test Enclosures



Portable enclosures for making wireless device OTA performance measurements. For design verification, pre-certification, and production line measurements.

Antenna Measurement Test Enclosures



Fully anechoic RF enclosures for antenna pattern measurements. Self-contained, moveable, compact cart design.

Mini-Reverb Test Enclosure



Convenient and affordable test environment for product design and development applications.

Small Device Acoustic Test Enclosures



Affordable option when critical measurements are not required. Utilized for testing acoustic levels of small mechanical and electronic assemblies.

Audiometric Test Booths



ETS-Lindgren makes a variety of test booths for the audiometric market. For more information, please visit our website at www.ets-lindgren.com/acoustics.

ETS-Lindgren is the proven leader with thousands of shielded enclosures installed worldwide. We offer solutions for some of the most demanding industrial, medical and government shielding challenges.



www.ets-lindgren.com/shielding

RF SHIELDING

Series 71 Screen Rooms



Provides RF shielding in a “hear-through, see-through” test environment.

Series 81 Shielded Rooms/Government Shielded Rooms



High performance modular steel shielding system for the best attenuation of magnetic and electric fields, and plane waves.

Series 101 Pan-Type Shielded Rooms



High performance modular steel shielding system for the best attenuation of magnetic and electric fields, and plane waves.

Series 101 Pan-Type Anechoic Chamber Shielding



Pan-type panel shielding for all test & measurement applications.

DEI Copper Screen Shielded Enclosures



Provides high shielding performance in a “hear-through, see-through” structure.

DEI Government Shielded Enclosures



Provides high shielding performance using various combinations of steel and copper.

Welded Shielded Enclosures



Welded construction for the most reliable and highest performance available.

TEMPEST/Government Secure Applications



For high threat, classified applications, including TEMPEST/government secure applications.

MRI RF Shielding



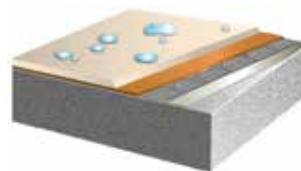
High performance, vertically-supported modular enclosure in copper, cell-type, or pan type material options.

MRI Magnetic Shielding



Added to an RF shield to contain portions of the MRI-generated magnetic field. Silicon steel or steel plate material options.

RF Floors



Available in monolithic and modular cell-type, these RF floors are the ideal foundation for all RF shielded rooms.

Magnetic Active Compensation System (MACS)



Cost-effective, maintenance-free environmental magnetic field cancellation solutions for high resolution EM instrumentation.

EMI/RFI Shielded Waveguide Air Vents



Improve airflow and maintain RF shielding effectiveness in industrial and government test environments.

Waveguide Feedthrough (Pipe Penetrations)



Designed as a waveguide penetration for signal lines while maintaining RF shield integrity.

Waveguide Filter (Fiber Optic Applications)



Designed to provide a means of bringing fiber optic cables into a shielded enclosure while maintaining the enclosures' radio frequency isolation integrity.

EMP Shielding



Pulse Protected Systems (PPS) with “Red Edge” technology, provide protection against EMP events.



ETS-Lindgren is the leading manufacturer of RF shielded doors and windows for the test and measurement, industrial shield and medical markets.

Automatic and manual swing and sliding doors are available in both standard and custom configurations.

www.ets-lindgren.com/doors

RF DOORS AND WINDOWS

Single Knife Edge Shielded Door



Single knife edge door with proven performance and reliability.

Double Knife Edge Shielded Door



Double knife edge door with proven performance and reliability.

Auto-Latching Shielded Door System



Maintains the high level of RF shielding effectiveness with auto latching convenience.

ASDS Shielded Door



Economical, stainless-steel door, designed for easy operation.

PHD Pneumatic Shielded Hinged Door



Pneumatically operated RF shielded, hinged leaf door.

PSD Pneumatic Shielded Sliding Door



Pneumatically operated all-welded access door for RF shielded enclosures.

RFD-60 Shielded Swing Door



High performance swing door with internal-type recessed hardware and special hinges.

RFD-100 Shielded Swing Door



High performance swing door with internal-type recessed hardware and special hinges.

RFD-F/A-100 Shielded Swing Door



Excellent performance at low magnetic field and up to 40 GHz (>100 dB). Can be equipped with absorbers.

SRFSD-F/A-100 Shielded Door



For both chambers and rooms where very large openings are required.

RFSD-100 Shielded Sliding Door



Shielding performance up to 40 GHz. Can be equipped with ferrite/pyramid absorbers for anechoic chamber requirements.

RFSD-F/A-100 Shielded Sliding Door



High performance sliding door for anechoic chambers. Up to 3 m x 3 m size. Pneumatic operation available.

Pneumatic Shielded Sliding Door for Government Applications



All-welded access door for RF shielded enclosures, secure facilities, or anechoic chambers.

Auto-Seal™ II Fire Rated Pneumatic Shielded Door



High performance shielded doors with RF-shielding, fire rating or acoustic treatment.

SSD Shielded Sliding Door



Ideal when the maximum door opening is required but limited space prevents a swing door from being used.

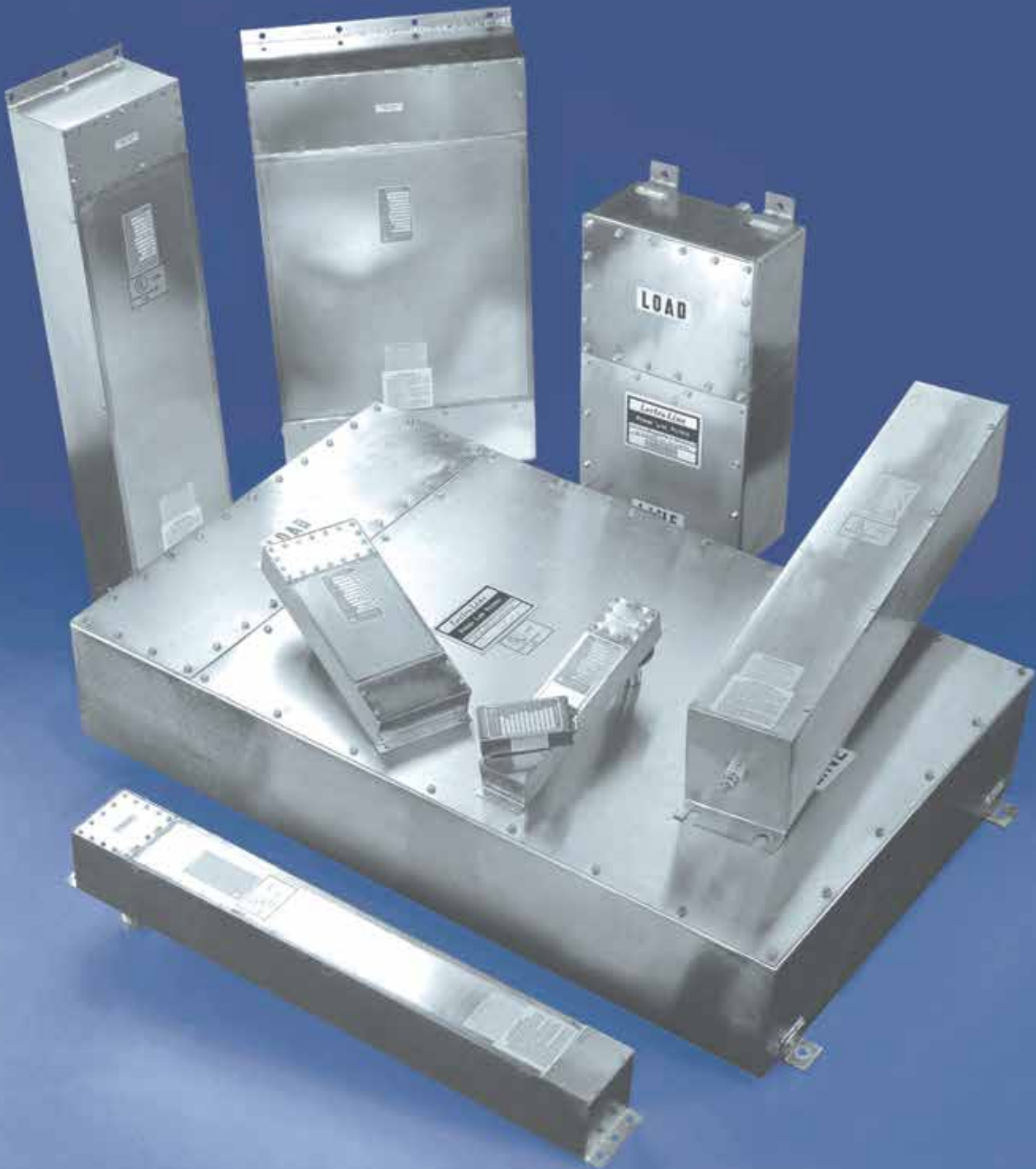
MRDS Shielded Swing Door



Designed to provide a reliable, economical and lightweight shielded door.

ETS-Lindgren manufactures a wide selection of general requirement, special application, and custom power line filters in a broad range of configurations, performances, and power levels.

All filters may be ordered with transient suppressors for improved protection against voltage transients.



www.ets-lindgren.com/filters

FILTERS - POWER LINE

LRX Series Single Line (US)



Individual circuit filters with superior performance for stringent requirements.

LRX Series Dual Line (US)



Dual line single phase filters with superior performance for stringent requirements.

LPRX Series Wall Mount (US)



Multiple circuit wall mounted panel filters with superior performance for stringent requirements.

LFPRX Series Floor Stand (US)



Multiple circuit floor standing panel filters with superior performance for stringent requirements.

LRW Series Single Line (US)



Single line filters providing mid-performance for standard requirements.

LRW Series Dual Line (US)



Dual line filters providing mid-performance for standard requirements.

LRE Series Multi Line (US)



Multiple circuit commercial filters for moderate requirements. Available in two, three and four circuits.

N192X Series Single Line (European)



Very high performance single line power filters.

N2510 Series Single Line (European)



Economical and compact high current filters.

N182X Series Dual or Multi Line (European)



Compact, high performance RFI/EMI filters offer high protection for EMC. Dual or quad line.

N242X Series Dual Line (European)



Low earth leakage, high performance RFI/EMI filters have extremely low current leakage.

N500X Series Dual Line (European)



High performance EMI power filters for a variety of EMC, TEMPEST and government secure applications.

N502X and N503X Series Dual Line (European)



High performance EMP and EMI control filters for TEMPEST, EMP and EMC.

N255X Series Dual Line (European)



Very high performance RFI/EMI filters for maximum protection in TEMPEST, government secure and EMP applications.

N258X Series Multi Line (European)



High current RFI/EMP filters for use on main incoming three phase and neutral supplies. Ideal for EMP systems.

N600X Series Dual Line (European)



Very high performance EMC, TEMPEST and government secure application filters with low power dissipation.

ETS-Lindgren's pulse protected powerline filters with Red Edge™ Technology protects against damage to electronic equipment and loss of data caused by a sudden and intense electromagnetic pulse (EMP). The filters provide excellent multi-stage, over-voltage and EMI/ RFI protection. ETS-Lindgren is the only manufacturer to have their filters acceptance tested to the requirements of MIL-STD-188-125 by Little Mountain Test Facility at Hill Air Force Base, in Ogden, Utah and are also listed by ETL to UL 1283.

REDEGE™
PULSE PROTECTION



Intertek

www.ets-lindgren.com/EMPfilters

FILTERS - EMP

HEMP-2010



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
10 Amp, 480V maximum voltage with
two wires.

HEMP-2030



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
30 Amp, 480V maximum voltage with
two wires.

HEMP-4030



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
30 Amp, 480V maximum voltage with
four wires.

HEMP-2060



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
60 Amp, 480V maximum voltage with
two wires.

HEMP-4060



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
60 Amp, 480V maximum voltage with
four wires.

HEMP-2100



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
100 Amp, 480V maximum voltage with
two wires.

HEMP-4100



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
100 Amp, 480V maximum voltage with
four wires.

HEMP-4250



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
250 Amp, 480V maximum voltage with
four wires.

HEMP-4x400



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
400 Amp, 480V maximum voltage with
four wires.

HEMP-4x600



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
600 Amp, 480V maximum voltage with
four wires.

HEMP-4x800



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
800 Amp, 480V maximum voltage with
four wires.

HEMP-4x1200



REEDGE™
PULSE PROTECTION

EMP powerline pulse protection filter.
1200 Amp, 480V maximum voltage with
four wires.

ETS-Lindgren manufactures the widest variety of telephone, communication, data, control and signal line filters for an extensive range of applications.

All filters may be ordered with transient suppressors for improved protection against voltage transients.



www.ets-lindgren.com/filters

FILTERS- TELEPHONE, COMMUNICATION, CONTROL AND SIGNAL FILTERS

LTC Series Dual or Multi Line: Control Systems (US)



Two to 12 line LTC filters for in and outbound signal, sensor, voice and data communication.

LTC Series Dual or Multi Line: Digital Systems (US)



Two to 12 line LTC filters for in and outbound signal, sensor, voice and data communication.

LTC Series Dual or Multi Line: P.A./Alarm Systems (US)



Two to 12 line LTC filters for P.A. systems or alarm systems. Signal, sensor, voice and data communication.

LTC Series Dual or Multi Line: Security Systems (US)



Two to 12 line LTC filters for in and outbound signal, sensor, voice and data communication.

LTC Series Dual or Multi Line: Signal and Sensor (US)



Two to 12 line LTC filters for signal, sensor, voice and data communication.

LTC Series Dual or Multi Line: Telephone Line (US)



Two to 12 line LTC filters for either digital or voice/analog POTS.

LTC Series Dual or Multi Line: Specialty (US)



For communication lines entering and/or leaving shielded, computer, communication terminal, and information facilities.

LPTC Series Panels and Cabinets for Filters (US)



Panels and cabinets for dual circuit LTC filters.

N296X and N2972 Series Single or Multi Line (European)



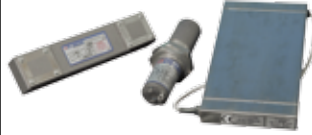
EMP and EMI control for various circuits. N296X is single line, N2972 is 10 line.

N2460 Series Dual and Multi Line (European)



RFI/EMI digital analog data filters for EMI, TEMPEST and government secure applications.

N24X and N29X Series (European)

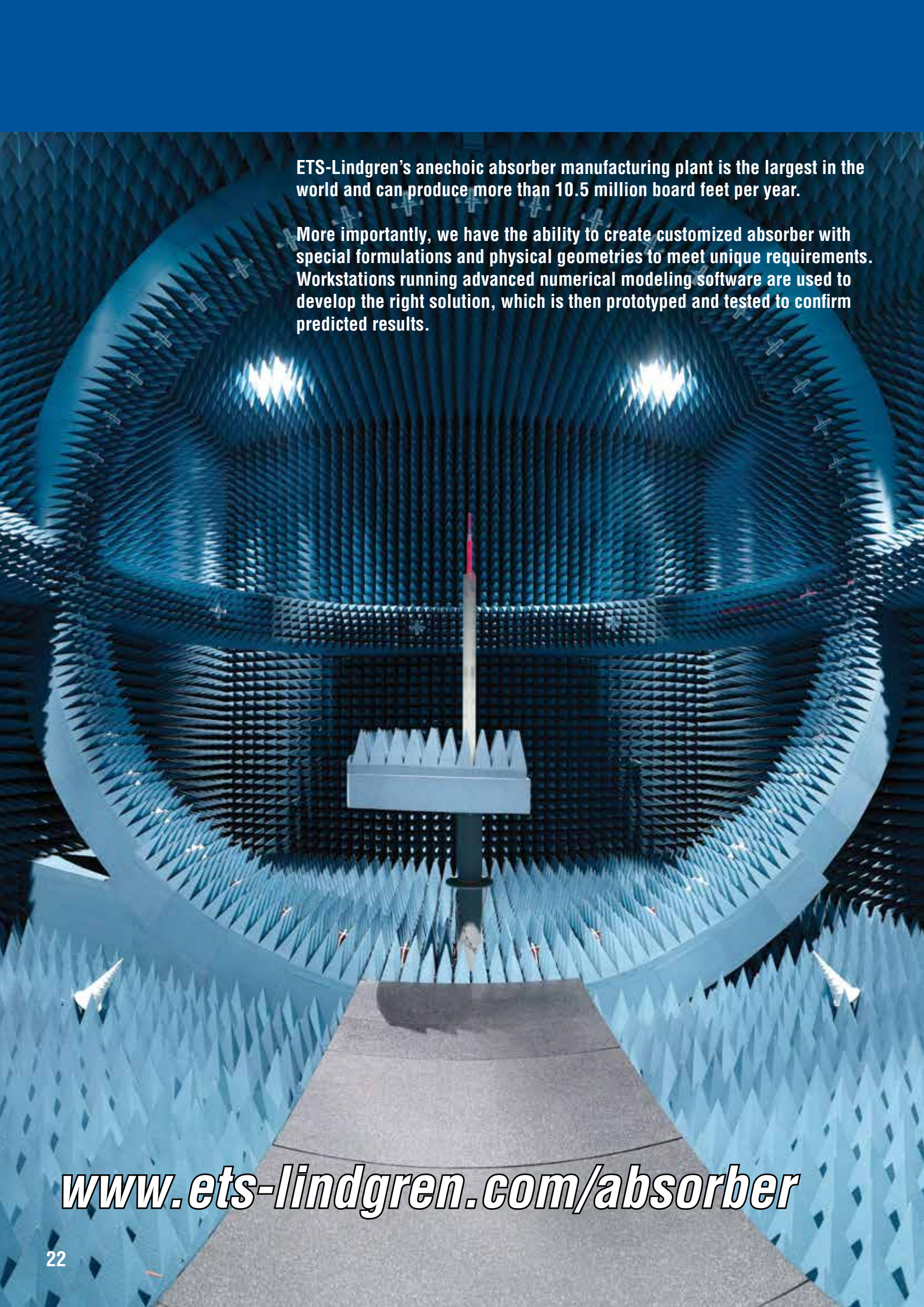


RFI/EMI telephone filters for EMI, EMP, TEMPEST and government secure applications.

L265X Series Capacitors (European)



RFI/EMI feed through capacitors for use on mains supply circuits and other DC and AC supplies.

The image shows the interior of a large anechoic chamber. The walls, floor, and ceiling are covered with thousands of dark, pyramidal-shaped electromagnetic absorbers designed to eliminate reflections. In the center, a test fixture is mounted on a stand, featuring a vertical rod with a red-tipped probe. The chamber is illuminated by several bright, circular lights on the ceiling, creating a high-contrast environment.

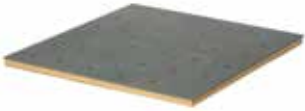
ETS-Lindgren's anechoic absorber manufacturing plant is the largest in the world and can produce more than 10.5 million board feet per year.

More importantly, we have the ability to create customized absorber with special formulations and physical geometries to meet unique requirements. Workstations running advanced numerical modeling software are used to develop the right solution, which is then prototyped and tested to confirm predicted results.

www.ets-lindgren.com/absorber

ABSORBER

Ferrite Tile EMC Absorber



Precision machined ferrite tile with a tuned dielectric backing layer creates high performance results.

FlexSorb™ Flexible Absorber



FlexSorb provides increased flexibility without affecting reflective performance, power handling, or fire retardant properties.

DuraSorb™ Series EMC Absorber



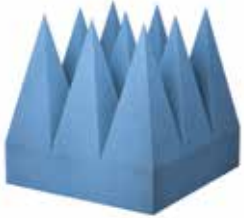
Hybrid polystyrene anechoic absorber combining broadband performance with rigid, closed cell construction.

PCL Series EMC and Microwave Absorber



Ultra broadband EMC/microwave absorber, optimized for MIL-STD 461 applications.

EHP Pyramidal Series Microwave Absorber



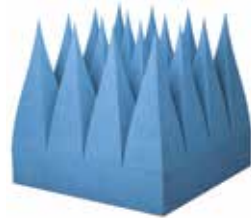
Designed for use over a wide frequency for several test applications.

EHP Convoluted Series Microwave Absorber



Convoluted front surface creates a gradual transition from free-space to loaded substrate.

CRV Series Microwave Absorber



Critical region curvilinear absorber, optimized for broadband reflection suppression.

HP Series Microwave Absorber



High powered, low flammability absorber for high vacuum applications.

Wedge Cut Microwave Absorber



Used where pyramidal absorbers would provide too much backscatter.

Walkway Microwave Absorber



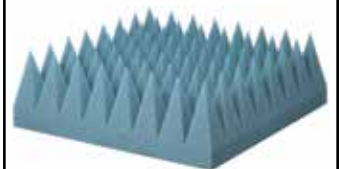
A walking surface for personnel, that is compatible with anechoic chamber reflection requirements.

Flat Laminate Microwave Absorber



Moderate performance. Flexible, easy to cut for placement around positioners, nearfield scanners, etc.

Filter Foam EMC Absorber

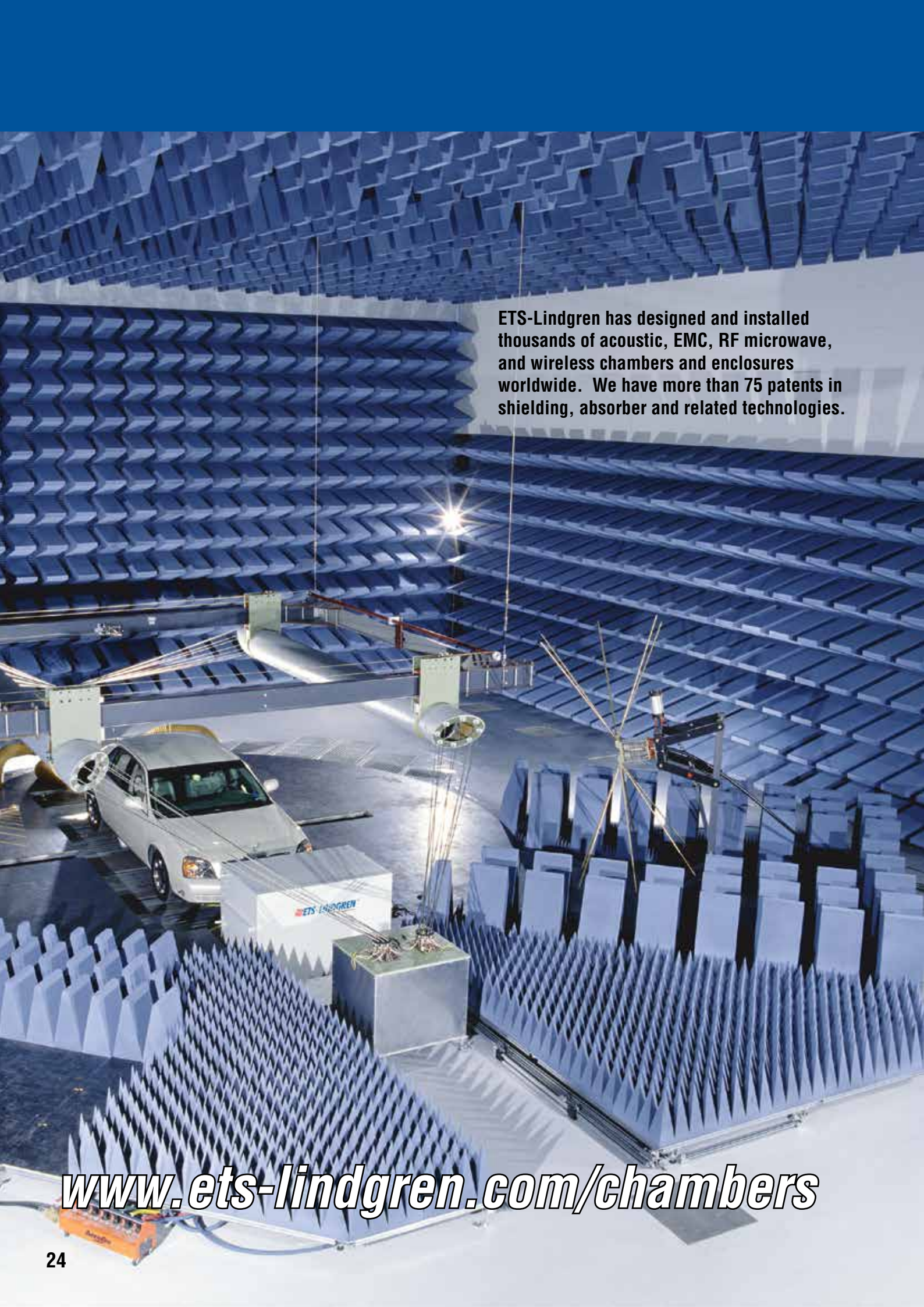


Suitable for outdoor use. Available in pyramidal and wedge and wedge-type cuts.

FerroSorb™ FS Series EMC Absorber



Combines high performance carbon-loaded foam absorber with precision-manufactured ferrite tile.



ETS-Lindgren has designed and installed thousands of acoustic, EMC, RF microwave, and wireless chambers and enclosures worldwide. We have more than 75 patents in shielding, absorber and related technologies.

[*www.ets-lindgren.com/chambers*](http://www.ets-lindgren.com/chambers)

CHAMBERS

FACT™ Series EMC Chambers



An EMC test environment ideal for most international commercial EMC testing, available in 3, 5 and 10 m sizes.

Automotive EMC Chambers



A specialized version of our FACT family designed for whole vehicle testing.

SpaceSaver™ Series EMC Chambers



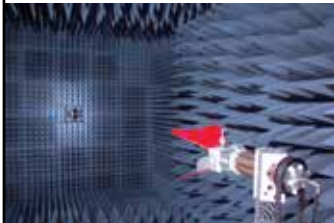
Small and compact chambers for pre-compliance measurements and fully compliant immunity testing.

SMART™ Series EMC Chambers



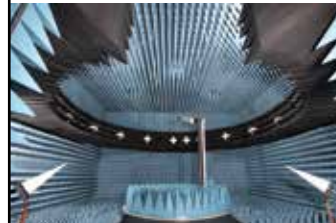
Reverberation chambers for generating high fields over large volumes. For immunity measurement of large equipment.

Antenna Measurement Chambers



Rectangular or Tapered Chambers with a 360° degree phi/theta Multi-Axis Positioning System.

MIMO OTA Measurement Chambers



A MIMO OTA system for measurement of wireless devices in a simulated multi-path environment.

Spherical Scanning Measurement Chambers



Rectangular chamber with a theta rotational arm for spherical scanning of wireless devices.

Multi-Sensor Array Measurement Chambers



Multi-sensor system providing high speed testing of wireless devices.

Fully Anechoic Acoustic Chambers



Precision-grade free-field chambers, measuring sound source directivity, frequency response, and noise emissions.

Hemi-Anechoic Acoustic Chambers



A precise free-field environment used to measure sound sources over a reflecting plane.

Reverberation Acoustic Chambers



Designed to produce a non-directional or diffused sound field within the chamber.

Predictable Field Acoustic Chambers



An economical solution for engineering or survey grade tests allowed by many standards.

Satellite, HiL and Microwave Chambers



Specialty chambers for hardware performance testing of Aerospace and Defense systems.

Near Field Microwave Systems



Anechoic rooms for the housing of Near-Field Scanners used in the measurement of electrically large antennas.

RCS and Antenna Compact Ranges



Chambers with specially designed anechoic material layouts to integrate reflectors for radar and large antenna measurements.

MIL-STD EMC Chambers



A MIL-STD test environment, specifically for MIL-STD 461 and RTCA DO-160 measurements.

GTEMs enable users to perform emissions and radiated immunity tests in less time than an OATS or an anechoic chamber.

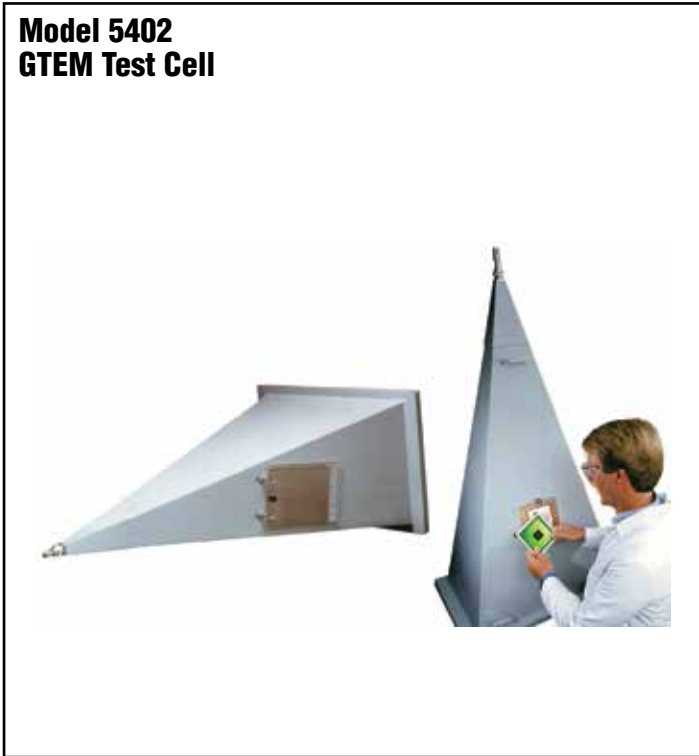
More than 400 GTEMs have been installed worldwide since 1989. Attempts have been made to imitate the technology, but nothing has achieved the success or acceptance of the GTEM.



www.ets-lindgren.com/gtem

GTEM!™ TEST CELLS

**Model 5402
GTEM Test Cell**



Compact, bench top sized, portable GTEM for smaller DUTs.

**Model 5405
GTEM Test Cell**



GTEM for testing small to medium sized DUTs.

**Model 5407
GTEM Test Cell**



GTEM for testing medium to large DUTs.

**Model 5411
GTEM Test Cell**



GTEM for testing large DUTs.

With full integration including test environments, instrumentation, and software, we are the solutions providers for Wireless OTA and EMC test systems. With both anechoic and reverberation options, ETS-Lindgren offers the ideal environment for any testing requirement.



[*www.ets-lindgren.com/systems*](http://www.ets-lindgren.com/systems)

SYSTEM SOLUTIONS

AMS-7000 Portable Test System (Reverb)



Portable test system designed to perform accurate and repeatable SISO TRP, TIS and Throughput measurements.

AMS-8040 Portable Test System (Anechoic)



Portable test system including an anechoic RF enclosure and 2-axis positioner; performs active measurements.

AMS-8041 Portable Test System (Anechoic)



Portable test system including an anechoic RF enclosure and 2-axis positioner; performs active and passive measurements.

AMS-8050 Portable Test System (Anechoic)



Portable test system including an anechoic RF enclosure; designed for wireless pre-compliance measurements.

AMS-8055 Portable Test System (Anechoic)



A portable MIMO OTA system for measurement of wireless devices in a simulated multi-path environment.

AMS-7200 Test System (Reverb)



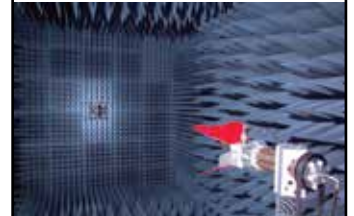
Test system designed to perform accurate and repeatable SISO TRP, TIS and Throughput measurements.

AMS-8100 APM Test System (Anechoic)



Test system including a compact, rectangular chamber. Designed for testing general antenna devices.

AMS-8500 Wireless APM Test System (Anechoic)



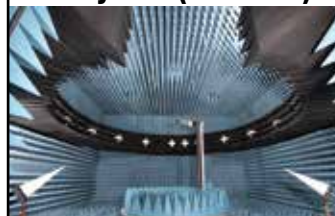
Test system including a full-size rectangular chambers with a 360° degree phi/theta Multi-Axis Positioning System.

AMS-8600 Wireless APM Test System (Anechoic)



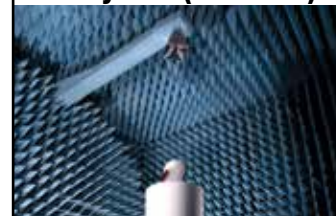
Test system including a compact tapered chamber with a 360° degree phi/theta Multi-Axis Positioning System.

AMS-8700 Wireless APM Test System (Anechoic)



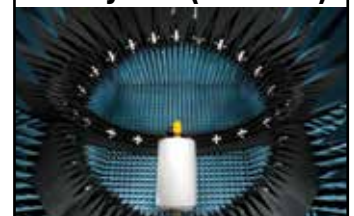
A MIMO OTA system for measurement of wireless devices in a simulated multi-path environment.

AMS-8800 Wireless APM Test System (Anechoic)



Rectangular chamber test system with a theta rotational arm for spherical scanning of wireless devices.

AMS-8900 Multi-sensor Test System (Anechoic)



Multi-sensor system providing high speed testing of wireless devices. Above shown with MIMO test system option.

EMC Chamber Test Systems



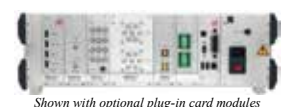
Complete EMC system integration that simplifies testing in anechoic chambers, including management of towers and turntables.

GTEM Test Systems



Complete systems integration that simplifies testing in GTEM cells, including TEM and EUT coupling functions.

EMCenter™ Modular RF Platform



Flexible measuring platform with an integral microcontroller, touch screen control, and a backplane that accepts up to seven plug-in card modules; each one a specialized RF instrument. Everything is contained in a 3U high chassis that can be used alone on a desktop or mounted in a rack.

ETS-Lindgren offers a wide range of RF power amplifiers for any EMC test application. These amplifiers produce excellent output power levels, while maintaining an efficient performance level.



[*www.ets-lindgren.com/amplifiers*](http://www.ets-lindgren.com/amplifiers)

AMPLIFIER SOLUTIONS

Automotive Amplifier Solutions



ETS-Lindgren's automotive power amplifiers are designed primarily for automotive applications that include ISO 11452-2 testing requirements.

Commercial EMC Amplifier Solutions



ETS-Lindgren commercial EMC power amplifiers are designed primarily for commercial applications that include IEC/EN 61000-4-3 and IEC/EN 61000-4-6 test requirements.

DO-160 Amplifier Solutions



ETS-Lindgren's DO-160 power amplifiers are designed primarily for DO-160 testing requirements.

MIL-STD Amplifier Solutions



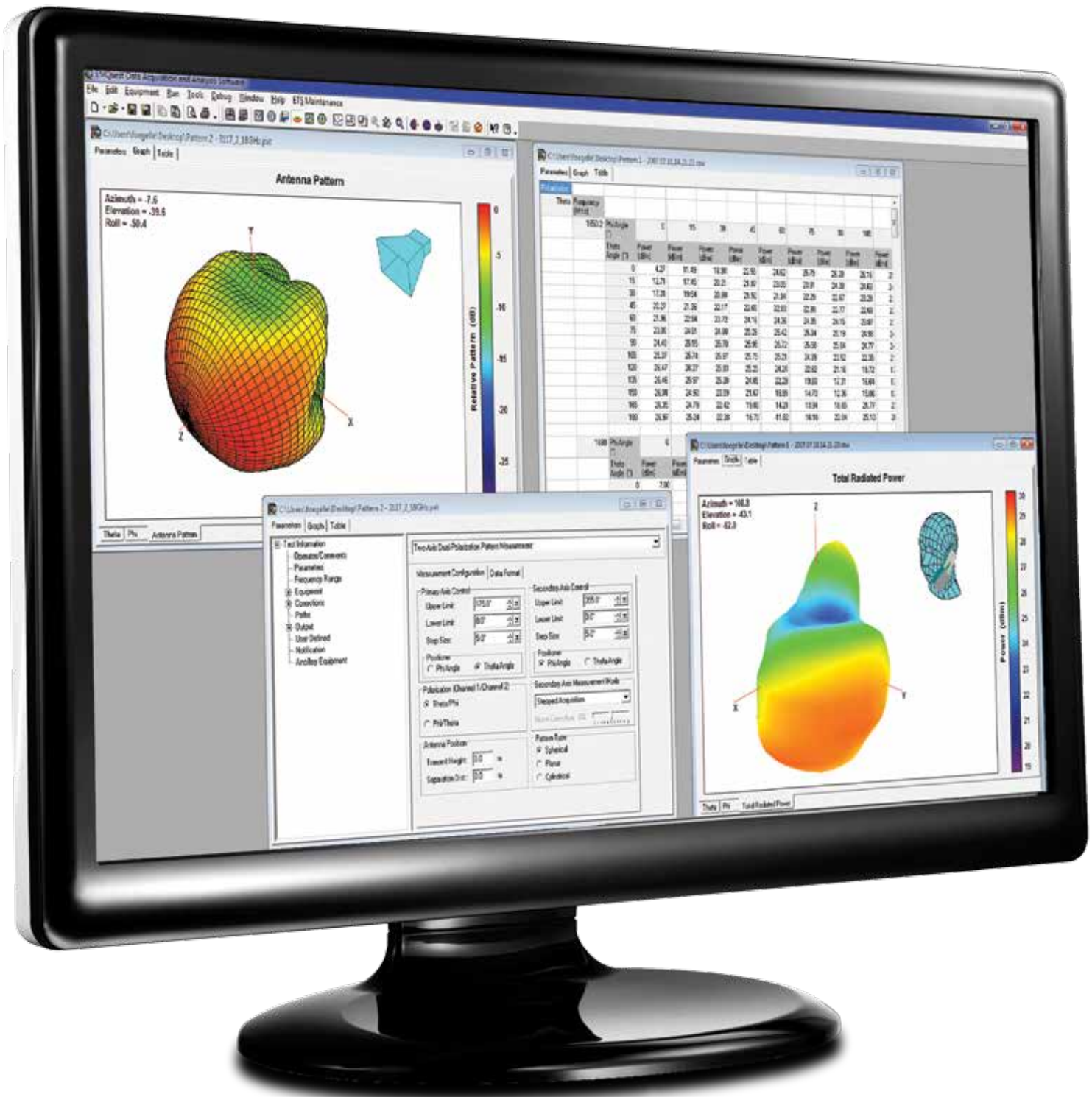
ETS-Lindgren's MIL-STD power amplifiers are designed primarily for military applications that include MIL-STD 461 CS114 testing requirements.

EMField™ Generator



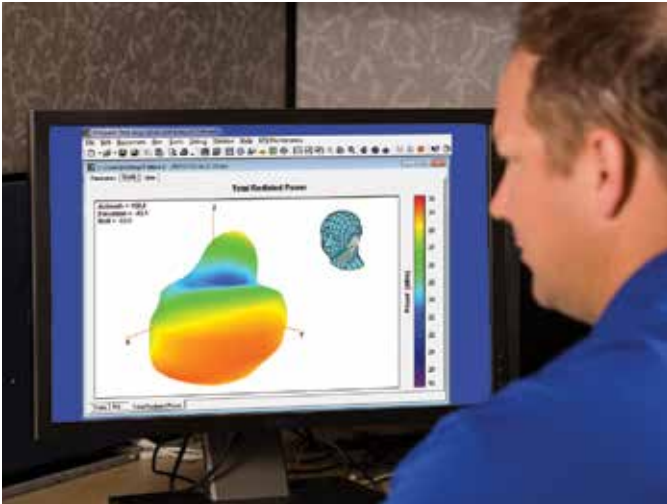
The EMField is a unique, integrated solution for Radiated Immunity testing including IEC/EN 61000-4-3. It combines an amplifier, directional couplers, and an antenna array into one remarkable, simplified design. Almost all of the generated power is converted into usable field strength.

ETS-Lindgren products are developed by software professionals with the know-how gained from designing, installing and supporting EMC, EMF and wireless test software applications for hundreds of customers worldwide.



www.ets-lindgren.com/software

EMQuest™ Antenna Measurement Software



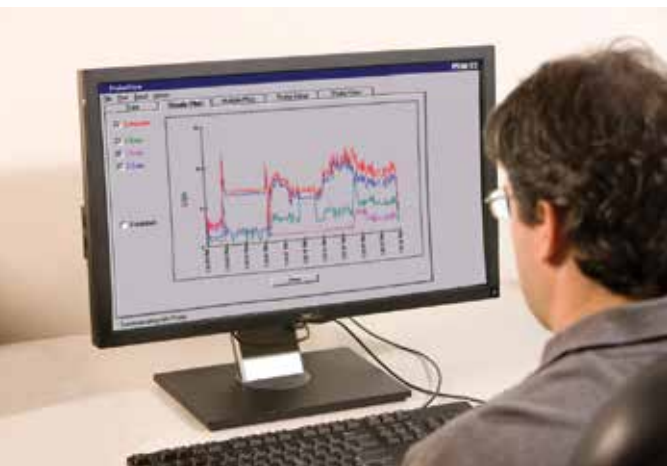
Antenna measurement software offering a wide range of fully parameterized test methods for measuring basic antenna performance metrics as well as testing both radiated and conducted performance of various wireless devices.

TILE!™ Totally Integrated Laboratory Environment Software



Lets you manage complex test sequences with drag-n-drop simplicity. TILE! software is an integrated approach to designing, performing, reporting and archiving complex electromagnetic compatibility (EMC) tests.

ProbeView™ EMF Probe Software



Windows-based graphical analysis tool for real-time or post-measurement data sets. ProbeView reads data from EMF Probes and offers user-selectable viewing options (numeric or graphical), selectable logging, simultaneous display of peak-hold and current field strength data, and graphical representations of field strength versus time.

Software Maintenance Support Program



ETS-Lindgren offers a maintenance support program for both TILE and EMQuest software. Maintenance program features support, software updates, enhancements, and online user group access, based on software product.

ETS-Lindgren provides engineers with test and measurement accessories for EMC, wireless, microwave, acoustic and medical markets.



www.ets-lindgren.com/accessories

ACCESSORIES

Product Cases



Provides a safe way to store and ship delicate equipment. Designed to have uniform wall strength and thick, reinforced corners. Moisture and chemical resistant.

RF Attenuation Meter



Designed for shielded effectiveness measurements of shielded enclosures. Makes measurements at four selectable frequencies.

Universal Spherical Dipole Source



Assists in maintaining the integrity of a chamber or OATS environment by allowing a radiated emissions field profile to be created and compared with previous profiles.

Model 4330 (Pinhole) Model 4340 (CCTV) Camera Systems



Choice of pinhole, mounted on a bulkhead feedthrough panel (Model 4330) or shielded camera designed for both emission and immunity testing conditions (Model 4340).

Line Impedance Stabilization Networks (LISN)



Line Impedance Stabilization Networks (LISN) are low pass filter networks used to measure common mode conducted emissions from power lines. Several models are offered.

6400 Series Helmholtz Coils



Helmholtz Coils create an extremely uniform low frequency magnetic field between and in the center of the coils. Standard models and custom configurations available.

LED Chamber Lighting



Offers RF noise-free operation, low heat displacement and long life. Usable in new or existing EMC, Microwave, Wireless, and Acoustic test chambers.

Fiber Optic Chamber Lighting



Cost effective solution for illuminating the interior of anechoic chambers with cool white light.

Low Reflection EUT Tables



Lightweight EUT table designed to produce low reflection in EMC test environments. Available in two designs (special order product, call for details).

Phantom Heads



Simulating the average human head, these measurement phantom heads are designed for Over-the-Air (OTA) performance testing within a chamber.

Phantom Head and Hand Kits




These kits combine phantom head and phantom hands to provide a CTIA 3.1 compliant grip. Available hand designs include grips for mono block and slide for voice, fold for voice, data mode and PDA devices. Measurement spacers also available.

Phantom Hand Only Kits



These hands are made of the same dielectric materials as in our head and hand kits, however these hands mount directly to the positioning device. Available grips include mono block and slide for voice, fold for voice, data mode and PDA devices.

A technician wearing a blue shirt, jeans, and a brown cap is crouching on the floor of an anechoic chamber, working on a large, complex industrial machine. The machine features a large, circular, metallic platform with various mechanical components, including rollers and structural frames. The chamber's interior is lined with dark, angular, pyramidal-shaped electromagnetic absorbers designed to eliminate reflections. Several white, cube-shaped objects are suspended in the air above the machine. A yellow power drill lies on the floor near the technician. The scene is dimly lit, emphasizing the technical and industrial nature of the environment.

ETS-Lindgren offers a wide breadth of services. From education to consulting, calibration to testing, our dedicated experts are committed to the success of the projects we work on.

www.ets-lindgren.com/services

Engineering and Consulting



ETS-Lindgren has the in-house experts that can design integrated systems, manufacture custom components, perform site surveys (including EMI and vibration), and oversee project management.

Educational Programs



From basics to more advanced topics, three-day hands-on classes are available for EMC, MIL-STD, and Wireless OTA testing.

Product Calibration



Our A2LA accredited calibration facility can perform calibrations on most manufacturers' EMC antennas, current clamps, probes, LISNs, cables, and attenuators. All calibrations include actual measured data and a signed Certificate of Calibration.

Product Repair



ETS-Lindgren offers repair of most components, including antennas, probes, and current clamps. On-site repair is also available for positioners, doors, and chambers.

Maintenance



ETS-Lindgren offers Calibration Services Plus!™ maintenance program for most test and measurement components. Additionally, on-site maintenance and repair of chambers, doors, and positioners can be performed to ensure equipment operates properly.

Testing Services



Acoustic and wireless product testing is available at ETS-Lindgren. Acoustic testing is performed in our NVLAP accredited laboratory (NVLAP lab code 100286-0). In 2002, we became the first CTIA Authorized Test Lab (CATL) for mobile station OTA performance testing. We also offer A-GPS and MIMO testing.



GLOBAL PRESENCE, LOCAL SUPPORT



Corporate Headquarters



Regional Sales Office



Manufacturing Facility



SALES AND SUPPORT OFFICES

UNITED STATES – TEXAS

Cedar Park, TX
+1.512.531.6400 Phone
+1.512.531.6500 Fax
info@ets-lindgren.com

UNITED STATES – ILLINOIS

Wood Dale, IL
+1.630.307.7200 Phone
+1.630.307.7571 Fax
info@ets-lindgren.com

UNITED STATES – WISCONSIN

Minocqua, WI
+1.715.356.2022 Phone
+1.715.356.2023 Fax
info@ets-lindgren.com

BRAZIL

São Paulo
+55(11)3123.9700 Phone
+55(11)3123-9078 Fax
info@ets-lindgren.com

GERMANY

Taufkirchen
+49.89.614171.0 Phone
+49.89.614171.71 Fax
germany@ets-lindgren.com

FINLAND

Eura
+358.2.8383.300 Phone
+358.2.8651.233 Fax
euinfo@ets-lindgren.com

UNITED KINGDOM

Stevenage, Hertfordshire
+44.1438.730.700 Phone
+44.1438.730.751 Fax
uk@ets-lindgren.com

FRANCE

Boulogne Billancourt
+33 (0) 1 74 31 10 21 Phone
france@ets-lindgren.com

UNITED ARAB EMIRATES

Dubai
+971.55.610.4055 Phone
uae@ets-lindgren.com

INDIA

Bangalore
+91.80.4341.8600 Phone
+91.80.4341.8611 Fax
indiainfo@ets-lindgren.com

JAPAN

Tokyo
+81.3.3813.7100 Phone
+81.3.3813.8068 Fax
japan@ets-lindgren.com

SINGAPORE

Singapore
+65.6391.0912 Phone
+65.6298.9509 Fax
singapore@ets-lindgren.com

CHINA

Beijing
+86(10)8273.0877 Phone
+86(10)8273.0880 Fax
china@ets-lindgren.com

TAIWAN

Taipei
+886.2.27023389 Phone
+886.2.27023055 Fax
taiwan@ets-lindgren.com

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ets-lindgren.com